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ABSTRACT

The purpose of this paper is to critically re-examine the popular concept of a developing "digital divide." Based on qualitative studies of the computer practices of two Mexicano families resident in California, the paper argues with Warschauer (2001) that the "digital divide" should be seen as a continuum of varying degrees of engagement with technology. While recognizing class and gender inequalities in relation to technology, this paper proposes that there are computer users with varying degrees of literacy in relation to what they can do, rather than merely relegating them to one side of a "divide." This paper is based upon comparing results from two small-scale qualitative studies, both carried out in the San Francisco Bay Area during the 2000-2001 academic year. As both families are of Mexican origin with less than ten years residence in the U.S., they represent an ethnicity popularly relegated to the "computer illiterate" side of the "digital divide." However, both families own new personal computers which are used for a variety of purposes by all family members. Rather than reinforcing images of a "divide," this paper demonstrates the multiple nature of computer literacies as they are practiced by individuals in particular communities. While supporting Castells' (2000) distinction between the computer practices of those who produce and those who consume knowledge, the paper questions his binary division between two types of practices corresponding to two types of people. The following questions are posed: (1) What are the varied computer practices and literacies of the Mexicano adults in these studies? In what ways do these practices and literacies correspond to social class and gender? (2) To what extent does engagement with computer technology lead to economic opportunity and social mobility for the members of these families? In what other ways is this engagement valuable and meaningful for these diverse adults? (Contains 19 references.) (AEF)

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A *Digital* Divide?

Class and Gender in the Computer Practices of Two Mexicano Families

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Rosa: *[E]stoy trabajando donde plancho pero a lo largo me puede servir porque a veces ocupan en frente para recibir la ropa y ahorita ya es computadora... [Ahorita] empaqueto, lavo, plancho y digo bueno, quién sabe-- al rato esté en frente... El día que me pregunte, "¿Sabes usar una computadora?" y con gusto le voy a decir, "¡Sí!"* (laughs).
Rosa: [A]t this time I'm ironing, but in the long run (computer skills) could help me. Because sometimes they need people to work in the front to take in the clothes, and now that is done with the computer.... [Now] I pack, wash, iron and, well, who knows—in a little while I could be in front... The day when my manager asks me, 'Do you know how to use a computer?' I will joyfully tell her, 'Yes!' (laughs).[1]

Carmen: I remember having like a lot of pain in my [waist] when Margarita was born because I was holding her and then I was writing at the computer and holding her, and I remember doing a lot of it. But it was a lot of typing and a little bit of statistics.
...All that happened so many years ago...
Interviewer: So you were both writing your undergraduate dissertations when Margarita was a baby?
Edgar: Yeah (laughs).
Interviewer: (laughs)
Carmen: He finished, I didn't.

Introduction

The purpose of this paper is to critically re-examine the popular concept of a developing "digital divide" in our "post-typographic world" (Reinking, 1998). Based on qualitative studies of the computer practices of two Mexicano families resident in California, we argue with Warschauer (2001) that the "digital divide" should be seen as a continuum of varying degrees of engagement with technology. In keeping with this, we argue that computer literacies, like other forms of literacy, are multiple and highly contextualized (e.g., Scribner & Cole, 1981; Street, 1984, 1993; New London Group, 1996). While recognizing class and gender inequalities in relation to technology, this paper proposes that we see computer users with varying degrees of literacy in relation to what they *can* do, rather than merely relegating them to one side of a "divide."

This paper is based upon comparing results from two small-scale qualitative studies, both carried out in the San Francisco Bay Area during the 2000-2001 academic year. The first of these (Menard-Warwick, 2000) examined the computer practices of four middle-class families, two bilingual and two monolingual. The second study (Dabach, 2001) explored the experiences of immigrants enrolled in a Spanish-language basic computer class at a community technology center in a working-class neighborhood. Our current work compares the computer practices of one family from the first study, the Garzas, with those of one family from the second study, the Fuentes[2]. As both families are of Mexican origin with less than ten years residence in the U.S., they represent an ethnicity popularly relegated to the "computer illiterate" side of the "digital divide." However, both families own new personal computers which are used for a variety of purposes by all family members.

Therefore, rather than reinforcing images of a "divide," this paper intends to demonstrate the multiple nature of computer literacies as they are practiced by individuals in particular communities. While supporting Castells' (2000) distinction between the computer practices of those who produce and those who consume knowledge, in his words, "*the interacting and the interacted*," (p. 402, italics in original), we question his binary division between two types of practices corresponding to two types of people. Instead, as a theoretical framework, we prefer Warschauer's (2001) model in which the digital divide is re-drawn as a continuum, with differential degrees of individual interaction with technology based upon five factors: *access, content, human capital, social capital, and institutional reform*. To these five factors, we would add

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[1] Authors' translation

[2] To protect confidentiality, names given for study participants are pseudonyms.

affect. Recognizing the intimate connection of each of these factors with social class and gender, we pose the following questions:

1) What are the varied computer practices and literacies of the Mexicano adults in our studies? In what ways do these practices and literacies correspond to social class and gender?

2) To what extent does engagement with computer technology lead to economic opportunity and social mobility for the members of these families? In what other ways is this engagement valuable and meaningful for these diverse adults?

Review of Literature

With the recent major technological transformations of societies there has been much discussion of the "digital divide." The concept of the "digital divide" typically refers to the increasing disparity between those who have access to computer technology and those who do not—a division which exacerbates existing inequalities. As more and more people begin to interact with the Internet, it is argued that those who do not have the means or the access to computer technology will be by-passed and "left behind" in an increasingly networked yet fragmented world.

Sociologist Manuel Castells (2000) notes that patterns of global economic segmentation are "characterized by a double movement: on the one hand, valuable segments of territories and people are linked in the global networks of value making and wealth appropriation. On the other hand, everything, and everyone, which does not have value, according to what is valued in the networks, or ceases to have value, is switched off the networks, and ultimately discarded (134)." However, he adds, these patterns are dynamic.

In the face of patterns of segmentation, computer technology exacerbates these trends (Castells, 2000, p.402). People without access or means are further by-passed by networks. Moreover, US government reports have shown that "disadvantaged minorities" and poor people do not have the same rates of access to computer technology as compared to their wealthier and non-minority counterparts (e.g., *Falling Through the Net* (1999)). In addition, numerous studies (e.g. Sofia, 1998; Huber & Schofield, 1998) document that girls and women have engaged less with technology than have boys and men.

Clearly there are individuals and communities who are by-passed by the newer forms of technology. As Castells notes:

> The global economy does not embrace all economic processes in the planet, it does not include all territories, and it does not include all people in its workings, although it does affect directly or indirectly the livelihood of all humankind (2000, p.132).

While this is true, the idea of a divide tends to reduce people to two camps: those who possess access and tools to use technology, and those who do not.

Past notions of literacy divides remind us that it is problematic to characterize literacy in a polar fashion. In the past, scholars such as Goody & Watt (1968) asserted that "individuals and societies could be divided up into whether they were literate or not, with far-ranging cognitive and social consequences automatically determined by this distinction" (Warschauer 2001, p. 2). Our intent is to shift the conversation away from overemphasizing how communities or individuals *lack* access or other means. As Kathleen Rockhill (1993) asserts:

> In the process of establishing literacy as a universalistic formula through which equality can be realized, literacy is treated as though it occurs in a vacuum. Thus, all learners are treated the same, but symbolically are

> dichotomized as literate or illiterate -- that is, learners or non-learners -- and literacy is established as an isolatable, measurable, uniform 'thing', a skill or commodity that can be acquired... That is, literacy is treated as though it is outside the social and political relations, ideological practices, and symbolic meaning structures in which it is embedded (162).

The points that Rockhill raise also apply to computer literacy. Individuals and communities are often dichotomized as computer "literate or illiterate" or as "connected" or "disconnected." Furthermore, computer literacy is often seen as a "skill" to be acquired. However, notions of literacy as a "practice" rather than a "skill" emphasize that literacy is embedded in larger societal and personal contexts; as Lytle (1991) describes it: "literacy is not a feature or attribute of a person, but literacy as practice: the range of activities people engage in for a variety of purposes (p. 520). The same individual engages in a variety of literacy activities. Furthermore, it is important to note that "from among a range of skills, certain ones become privileged as functional requirements," and "these conform to particular cultural, gender and ideological prescriptions" (Rockhill 1993, p.165). It is important to recognize that both "literacy" and "skill" are culturally constructed in ways which privilege certain forms of knowledge which reflect class, gender, ethnic and cultural ideologies (Lytle 1991, Rockhill 1993, Warschauer 1999).

In addition to the ways in which literacy struggles are re-created and lived through class, gender, and ethno-racial patterns, Deborah Brandt (1999) points to the fact that economic circumstances surrounding literacy condition literacy opportunities and learning. While departing from the commonly held view that literacy determines one's economic standing, Brandt's position emphasizes the connection between social class and literacy practices. In exploring this connection, we will refer to social classes not as static categories, but as differential opportunities for access to particular kinds of social and

cultural capital (Bourdieu, 1991; Warschauer, in press)[3] through family membership, neighborhood residence, etc. In arguing against a dichotomous digital divide, Warschauer (1999) nonetheless notes:

> People will use the Internet for everything from creative construction of knowledge to passive reception of multimedia glitz .Whether users fall on one end of this continuum or the other is likely to be highly influenced by class, race, gender, and country, but *highly influenced* does not mean *completely determined*. Literacy practices are influenced by the day-to-day struggles of power (Street, 1993), as are uses of new technologies (Feenberg, 1991) (21).

Thus, class, race, gender, etc. have an effect on an individual's store of cultural capital. This capital in turn influences and is influenced by that individual's computer practices. As our study shows, a working-class woman can turn enthusiastically to computer use, but the way in which she uses the computer is going to reflect her own interests and values--and may bear little resemblance to the computer use of a middle-class man. Moreover, it may not be financially rewarded to the same degree.

Methodology

In the first study (Menard-Warwick, 2000), which examined the computer practices of a middle-class Spanish-English bilingual family, the researcher interviewed family members together and/or separately in their own homes on their personal histories with computers as well as their current practices. In addition, family members demonstrated their favorite practices to the researcher. All observations and interviews were audiorecorded and transcribed. In addition, detailed field notes were written on

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[3] Social theorist Pierre Bourdieu argues that there are different forms of "capital" corresponding to the different social classes: " not only 'economic capital' in the strict sense..., but also 'cultural capital' (i.e. knowledge, skills and other cultural acquisitions, as exemplified by educational or technical qualifications), 'symbolic capital' (i.e. accumulated prestige or honor), and so on" (1991, p. 14). In his discussion of technology and social inclusion, Warschauer (in press) defines social capital "as the capacity of individuals

each home visit. Thus, data on the Garza family consists of the transcripts from an approximately 2 hour interview in English with both adults (Carmen and Edgar) together as well as shorter individual interviews with their two older children. It also includes transcripts and field notes based on an approximately half-hour observation of family computer practices.

The second study (Dabach, 2001) explored the experiences of adult immigrants enrolled in a Spanish-language basic computer class at a federally-funded community technology center (CTC) known as the Neighborhood Computer Center (NCC). The researcher visited the center 10 times over a span of 10 weeks, attending most sessions of the eight-week adult computer basics course. Throughout this period of observation, she took detailed field notes. At the conclusion of the course, she coordinated with NCC's director to distribute a survey to the class of her own design. In addition to survey data, the researcher conducted structured and open-ended interviews with class members and instructors, which were recorded on audiotape. Additionally, some class sessions were recorded on digital videotape. Audiotapes and videotapes were transcribed and if necessary translated from Spanish to English. Data on the Fuentes family consists of transcribed and translated one-hour interviews conducted in Spanish separately on the same day with both adults (Rosa and Manuel). It also consists of the researcher's observation of their classroom participation, and of comments about the Fuentes' progress made by their instructors in the program in interviews with the researcher.

Garza Family

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to accrue benefits by dint of their personal relationships and memberships in particular social networks and structures" (p. 70).

> Carmen: Edgar's dad was working in a computer company, and he had some programmers teaching us, uh how to use a computer, like the…MS-DOS…And that's where I learned first to use the computers….and it was a 4-month class on how to use computers…. We were like 18 or 17.

Both Carmen and Edgar Garza are natives of Mexico City. At the time of the interview, they were both in their early thirties and lived with their three children, Margarita (10), Tomás (7), and Francisco (5) in a small apartment in a family housing complex at a California university, where Edgar had been a full-time PhD student in the natural sciences for approximately six years. At that time, Carmen held a full-time job doing clerical work for a small furniture company, also working occasionally as a freelance translator. Several months after the interview, Edgar completed his dissertation and obtained a position in his field with a government ministry in Mexico City. Before entering the PhD program, Edgar had completed an undergraduate degree in Mexico and a Master's degree in England, both in economics. Carmen had completed the coursework in Mexico for her undergraduate degree in veterinary science, but as explained in the introductory quote, she was unable to finish her thesis due to Margarita's birth. Native speakers of Spanish, both Edgar and Carmen are highly proficient in spoken and written English. Their children are also bilingual and academically successful but had not developed Spanish literacy skills in their California elementary school.

Both Edgar and Carmen have a long history of computer use, going back to the 1980s when they were high school sweethearts in Mexico City. As Carmen conveyed in the quote above, they initially were introduced to computers by Edgar's father, who arranged for the young people to take a training course at his company and then made the technology available for home use. As Carmen continued:

> So then we got a small PC…I don't know if they bought it, it was at Edgar's house. And then we will use it, I will use it just to play games, like arcade games….And if I had to type some things for school, for the university, then I will borrow it.

Thus, both Carmen and Edgar were introduced to computers as teenagers through being part of a middle-class family network, with at least one parent who had access to computers at work. In this way, they were able to use computers as university students in the 1980s when they were first becoming common.

Moreover, Edgar explained that he gained additional computer skills and experience working for a Mexican government ministry around the time Margarita was born (early 1990s):

> And then on the PC it was using Excel and word-processing and sometimes everyone was learning at the same time how to do certain things, and once you knew, you shared it with the rest…I remember it was fun….All those things you had to do, like calculations and papers, and they were so much easier and you could play with things. There was a lot of playing. Learning by playing.

While Carmen stayed home with the baby, Edgar had the opportunity to use his economics coursework professionally to support the family. This led to additional learning of computer skills from colleagues in a relaxed, "playful" atmosphere.

Both Edgar and Carmen continued to develop their computer skills after moving to California and buying a computer with a Windows operating system in the mid-1990s. As Carmen explained, "Someone will be telling me, 'oh now you do this' or I will be finding it by myself. I really like the logic behind computers." Then she laughed, "And sometimes I get very upset!" Nevertheless, her prior use of earlier model computers had introduced her to computer "logic" and given her confidence to further explore.

Moreover, Edgar's continuing professional use of technology meant that he was able to answer her questions when she did get "upset."

While Edgar and all three children were very fond of educational (often scientific) computer games,[4] e-mail in particular had become particularly important to them as a way of keeping in touch with friends and family members in Mexico. Carmen especially used e-mail to the point where Edgar would tease her about being "an e-mail addict," but Edgar too "chatted" with his father via e-mail on a regular basis. Carmen explained that she corresponded with her sisters now on a weekly basis, whereas before she might have telephoned them once a year on their birthdays. Carmen summarized the family computer use thus:

> Now here at home we use it very much. It's like how it has become a really important part of the household. And…yeah, for me the value is very big, in keeping communication with a lot of people, e-mail, that is something really…I think I could live without it, without the computer, if I didn't use e-mail. And the Internet….

To some extent, the Garza family's computer use seems to reflect gendered practices. Carmen used the Internet to shop for children's clothes and to find information on a variety of topics, such as recreational opportunities (such as bike trails), health and parenting. It is important to note that all of these uses correspond to her role as a mother. For example, when a friend's son was diagnosed with cystic fibrosis, Carmen found an informative website on the disease.[5] She tended to go to websites in English: "I never go to Spanish ones, because I just go fast, you know, I don't want to spend more than one

[4] The researcher observed Margarita (age 10) and Francisco (age 5) playing "Magic School Bus at the Coral Reef"; Edgar and Tomás (age 7) prefer "SimLife."
[5] Warschauer (in press) notes that it is becoming increasingly common for women to seek health information on the Internet, for friends and family members as well as themselves.

hour, forty minutes..." A lack of time was also the reason she preferred the Internet to bookstores:

> I went to the bookstore the other day looking for parenting books, and it was really tense because I didn't have enough time, and it was in the middle of the day, and I was just...there was so many books, and I have to just grab them, and look, also you have them in your hand, it was like "Aa-aa-aa-aa-aa!" So I prefer to go on the web...

In fact, Amazon.com was one of Carmen's favorite websites although she said she couldn't afford to visit it very often. As she explained:

> Sometimes I don't have the book in mind but I have the subject. Then I ...I read what people said, about the book, and sometimes I get good surprises... I was looking books about Zen, and then I saw this one, *Zen and the Motorcycle Maintenance*...and I was like what? and it was on the top list, a *lot* of reviews, and everybody was like "*Wow*! This is *great*!...And I went ahead and got it. And it was a nice surprise....Just right now I'm curious about trying to find a way to balance my very, very busy life. With spirituality, and with being happy, and I don't know...It's kind of like a spiritual uh quest. Trying to find answers, and looking.

It would clearly be difficult for a busy mother and full-time clerical worker like Carmen to pursue a similar "spiritual quest" without access to the wide-ranging resources of the Internet. In any case, while finding the Internet helpful to her both as a mother and as a spiritual being, Carmen's use of the computer at the company where she worked was more prosaic. When asked she explained without enthusiasm that:

> I do, like, new customers that are ordering catalogues, so I enter them in the computer and print the labels the same way. I enter some inventory. Usually it's just entering people. Or checking orders. Like somebody ordered this, and I have go on the computer to check if it was sent out or not.

Carmen's clerical employment is clearly "just a job," a long way from her interrupted professional training as a veterinarian. In contrast, Edgar used the computer for career enhancement, including dissertation research, keeping in touch with

colleagues, and scientific networking. For example, he mentioned a current project that was facilitated by e-mail access:

> I'm working with friends on a consultancy project for the Mexican government, so we're sending him information and reviewing things that he has done, so he sends me a version, then I make my comments or I correct things... Before (e-mail), it was more expensive to send things by mail and then get them back, it was much slower, less feedback.

Thus, e-mail allowed Edgar to work effectively as a scientist in Mexico while maintaining residence as a graduate student in the United States. It is important to note that in these consultancy projects, Edgar was *producing* as well as *consuming* information; in Castells' terms, he was a member of the "the interacting" rather than "the interacted."

Moreover, in contrast to Carmen's English-language computer use, Edgar said in the interview that his professional work frequently led him to Spanish language websites:

> But I go...to the newspapers and to the websites of research centers, that are in Latin America....(T)o know what they are doing, to see if I am interested in going there to work....(For example) (t)he research center of the _____ Ministry in Mexico. You go there and you check what is the latest...what's happening on different areas of environmental policy, toxic waste, conservation, etc etc. Sometimes I pull out the proceedings of a meeting that just happened about the development of water markets in Mexico, and that's the only place to get it....Or let's say environmental evaluation....For example, I wanted to look at the area under forest cover per state, that's where I got it.

This kind of transnational networking via computer subsequently paid off for Edgar. Several months after this interview he got a job at the government ministry whose website he describes visiting above. It seems clear that computer use facilitated his successful job search. Returning to Mexico, Carmen mentioned that she looked forward to staying home with the children for a while, to being less busy now that Edgar had

finished school. Perhaps in the future she will finish her veterinary degree, she said, but for now it seemed that she was content to be a wife and mother.

The Fuentes

> Rosa: *Mi sobrina tiene una computadora, entonces a la niña le llamó mucho la atención eso de los jueguitos, y me empecé a interesar por comprar una. Y entonces dije, bueno, si vamos a comprar una, tenemos que enseñarnos porque yo no sabía ni como prenderla!*
> Rosa: My niece has a computer, so my daughter was very interested in all those little [computer] games and I became interested in buying one. And so I said, well, if we are going to buy one, we have to teach ourselves because I didn't even know how to turn it on!

Whereas the Garzas were introduced to computers by Edgar's father in the 1980s, Rosa Fuentes, who is of the same generation but from a less advantaged social class, had to take the initiative herself two decades later to invest in a computer for her daughter. In her native state of Michoacan, Rosa had gone to school and completed seventh grade. After leaving school, she worked at a Rotisserie cleaning chickens and later as a housekeeper. The first time Rosa came to the U.S., she was 18 years old. She met her husband Manuel Fuentes in the U.S. in 1995 and, after a brief courtship, they married in the U.S. The family returned to Mexico shortly after their daughter Claudia was born, but found that earning a living in Mexico was difficult. Two years later, they returned to the U.S. for better economic opportunities.

Manuel, a native of Jalisco, had completed 11 years of schooling. Although in Mexico Manuel usually sold fruit to motorists, in the U.S. he was employed at a furniture store and later moved into construction work. At the time of the interview, Rosa was working at a dry cleaner's, washing, ironing and folding clothes. At that time she was the breadwinner in the family, as Manuel was unemployed. Both Manuel and Rosa spoke

limited English.

Neither Rosa nor Manuel had had much experience with computers prior to arriving to the Neighborhood Computer Center (NCC) where they were both enrolled in a basic computer course in Spanish. However, Manuel had had more contact with computers than his wife. While working at a furniture store, Manuel learned to look up price information on a computer inventory program, but he did not know how to use any other software programs. When Rosa was asked if she had used a computer prior to the course, she replied:

> *¡No, para nada--no sabía ni como prenderla!... A veces llegaba con mis sobrinas. Movía el ratón pero con miedo a descomponerla...no la tocaba. No sabía ni prenderla. Me daba miedo-- pensaba que iba a descomponerla o borrar algo... Nada más miraba. Se me hacía imposible que iba aprender a diferenciar para que era cada botón... ¡se me hacía una cosa imposible!*
> No, not at all! I didn't even know how to turn it on!...Sometimes I would visit my nieces. I would move the mouse, but with the fear that I would break it...I just wouldn't touch it. I didn't even know how to turn it on. It scared me. I thought I would break it or erase something... I would just watch. I thought it was impossible to learn to differentiate what each button was for...it seemed impossible!

The language of fear seems to dominate her narrative. Even though she initially states that she had never used a computer before the class--- "not at all," she emphasizes-- later she mentions that she would occasionally touch the mouse with fear, and then retreat to watching others. Even though she was scared and obviously a novice, Rosa still knew enough about computers to know that she could erase something. Still, as recounted in the quote that opens this section, she did not intend to use or purchase a computer until her daughter Claudia (who is five years old) displayed an interest while playing computer games at her cousins' house. As Rosa explains, her daughter would frequently plead, "*¡Qué llévanme para allá! ¡Qué llévame, llévame*!" ("Take me over there! Take me, take

me!") so that she could play computer games with her cousins.

Because of Claudia's interest, the couple decided to purchase their first home computer. In addition to the possibility of playing computer games, the couple felt that having a computer would help their daughter in the future with her school work. However, once they had purchased a computer, they did not know how to operate it. At this point, Rosa began to seek information about computer classes.

Through co-workers Rosa discovered that there were computer courses available in her neighborhood. However, the cost was too expensive at $160 a month. While walking through the neighborhood to pick up her daughter from childcare she noticed Neighborhood Computer Center (NCC). When she saw a sign which announced free computer classes in Spanish, she was quite excited. She and her husband enrolled with the hopes that they would be able to show her daughter how to use the computer, since NCC did not have classes available for young children. The couple registered for the eight-week beginner course, which they attended regularly. Childcare was provided during the bi-weekly evening course, and the family would arrive at the Center together.

During the course, the instructor, Edmundo (Peruvian, late 40's) patiently and humorously guided the class through different computer tasks, such as turning the computer on and off, exploring the Internet and making personal business cards. At the end of the course both Rosa and Manuel felt that they had learned a great deal. In the interview, Rosa spoke enthusiastically about the computer course:

> *Puedes aprender muchas cosas de la computadora que tú no esperas aprender... Como, a mí se me hacía una cosa imposible y difícil lo de las tarjetas, hacer las tarjetas de negocio. ¡Y es una cosa sencilla! ...dije, ¿cuándo voy a saber hacer esto? ¡Y en cambio mira!...*
> You can learn things about the computer you never expect to learn...Like the thought of making my own business cards seemed impossible and

> difficult. And it's so simple!...[At first] I said, "When will I ever know how to do this?" And now look!

After taking the computer course at NCC, she felt as though she could do things that before seemed "impossible." She laughed as she added, "*No te digo que sé mucho, pero, a comparación de antes, ¡sí!* ("I'm not saying that I know a lot, but compared to before, I do!")

Since learning more about the Internet, the Fuentes enjoy "surfing the net." As in the case of the Garzas, the sites that Rosa and Manuel choose to visit tend to reflect their respective gender roles. In the following excerpt Rosa discusses her Internet use:

> *Bueno, a veces leo lo de las novelas, [laughs] por ejemplo como en México van más avanzadas que aquí. A veces veo que va pasar. [laughs]... Pues, si no tengo tiempo, por ejemplo, cuando estoy aquí [en el centro de computación] pierdo las novelas, una o dos. Entonces yo veo que va a pasar y así ya no preocupa si no la voy a ver. [laughs] A veces me gusta ver lo de, este [pause] de la mujer. Tú sabes, como eso de problemas que hay por ejemplo, como contrae el SIDA o como protegerse, todo eso, sexuaa-- ¿cómo se dice, sexualidad?....Es que nada más tú estás viendo y tú sabes lo que estás viendo y no te da pena leer o ver... Nada más tú sabes lo que estás haciendo o viendo. [laughs] Y a la vez aprendes.*
> Well, sometimes I read up on the soap operas, [*laughs*] for example, in Mexico their soap operas are ahead. I sometimes look ahead to see what will happen. [*laughs*]... When I'm here [at the computer center] I miss one or two soap operas. So I see what's going to happen, and this way I don't worry if I won't see it. [*laughs*] Sometimes I like to see, well--- women's things. You know, like the problems that there are--- for example, how one contracts AIDS, or how to protect oneself, all that, sexuaa—how do say, sexuality?.... It's only you that's seeing, and only you know what you are seeing, so you're not embarrassed for seeing it... Only *you* know what you are doing, or seeing. [*laughs*] At the same time you learn.

In Rosa's discussion of her use of Internet technology she explicitly highlights gender: "women's things." Not only is she able to look ahead to see what will happen next in the world of Mexican soap operas, but she is able to access information about women's sexuality including health issues such as AIDS prevention. Like Carmen

Garza, she exemplifies Warschauer's claim (in press) that seeking health information is a common Internet practice among women.

Manuel's Internet preferences could also be described as highly gendered. During the last class at NCC, Manuel openly discussed going to the Playboy.com website and made a point to show the site to a small group of students and the researcher (Fieldnotes 4/26/01). Also, on a survey he mentioned that Playboy.com is among his favorite web sites. When not looking at the Playboy web site, Manuel enjoyed going to sports sites to find out the latest scores. While his wife tended to visit Spanish websites, he often ventured into English sites. This makes sense as Manuel's preferred web sites display visual and numeric information which can be understood with less knowledge of English.

Just as Carmen's Internet use was often tied to her role as a mother, Rosa first became involved with computers as a result of her maternal role. During an interview Rosa discussed how she enrolled in the course with the expectation of teaching her daughter:

> *Más que nada me interesaban las clases para* ella. *Cuando vine yo quería ponerle a* ella. *Aquí pregunté. Y me dijieron que no, que solamente creo del cuarto grado, para arriba. Entonces dije bueno, si no hay para ella, me meto yo. Lo poco que yo aprendo se lo voy a enseñar a ella.... Como te digo que lo que voy sabiendo yo le voy ensenando a ella: como prenderla, a que moverla en caso en que no funcione, tú sabes, la flechita. Todo lo que estoy aprendiendo aquí, se estoy enseñando a ella. Si no hay clases para ella, qué aprenda de nosotros.*
> More than anything, I was interested in classes for *her* (Claudia). When I came (to NCC), I wanted to enroll *her*. I asked here (at NCC). And they told me no, that (classes are) only, I think, for fourth grade and up. So then I said, OK, if there aren't any for her, I'll go in. The little that I learn, I will teach her. Like I said, what I'm learning, I'm teaching her: how to turn it on, what to move it to in case, you know, the little arrow doesn't work. Everything I'm learning here, I'm teaching her. If there are no classes for her, let her learn from us.

It was in her role as a mother, then, that Rosa engaged in computer technology, from deciding to purchase the machine to taking classes. Surmounting her fears, Rosa's

primary impetus to "connect" to computer technology was her desire to provide for her daughter.

While the Fuentes clearly appreciated their opportunity to access computer technology for personal and educational reasons, much of the digital divide rhetoric has been couched in terms of economic opportunity. In this realm the Fuentes' experience with computers has been more ambiguous. When Rosa was asked if learning computer skills would help her with her job, she replied, as quoted in part at the beginning of this paper:

> *Pues ahorita no...pues estoy trabajando donde plancho pero a lo largo me puede servir porque a veces ocupan en frente para recibir la ropa y ahorita ya es computadora...En cambio a la manager le dije que estaba estudiando computación y me dijo "¡Oh! ¡Eso está muy bien!"... En el futuro me puede servir. Porque como allí yo hago un poquito te todo...[Ahorita] empaqueto, lavo, plancho y digo bueno, quién sabe-- al rato esté en frente y ya me va a servir. El día que me pregunte, "¿Sabes usar una computadora?" y con gusto le voy a decir, "¡Si!" [laughs] Y no van a hacer lo de enseñarme, "Pues, le tienes que hacerle aquí o lo mueves aquí..." Ya voy a ir un poco más avanzada.*
> Well, right now, no...because at this time I'm ironing, but in the long run it could help me. Because sometimes they need people to work the front desk to take in the clothes, and now that is done with the computer. However, I did tell my manager that I was taking these classes and she said, 'Wow! That is great!'.... It could benefit me in the future. Because over there I do a little of everything... [Now] I pack, wash, iron and, well, who knows—in a little while I could be in front, and [computer skills] would benefit me. The day when my manager asks me, "Do you know how to use a computer? I will joyfully tell her, 'Yes!' [*laughs*] They won't have to teach me: 'Well, you must do this here, or move this here ...' I will already be more advanced.

In this excerpt Rosa raised the issue of workplace mobility and hierarchy. Under the same roof, employees "in the back" mostly used manual labor as well as cleaning machines such as irons and presses, while "in the front" cashiers used computerized registers. For Rosa, learning computer skills meant the possibility of going from the "back" of the laundry room to the "front" where she would be able to take orders and

interact with customers. This change involves a degree of vertical mobility within the structure of the dry-cleaner's, as well as a change in Rosa's self-conception (she would be "more advanced"). However, after learning computer skills, she still saw herself as an employee in the same workplace.

In another part of the interview, Rosa talked about how her nieces encouraged her, telling her that by learning computer skills, she could get a better job. However in response, Rosa merely joked about the possibility.

> *Le digo a Manuel, cuando terminemos estas clases, si hay otro, le digo voy a seguir por que me interesa. Hasta mis sobrinas me dicen, "Sí, qué bueno que está yendo!" Dicen, "Así se puede encontrar un mejor trabajo, y se sale de donde está!" (laughs) Les digo, "Al rato me van a ver trabajando en las oficinas!" (laughs) pero, tú sabes, bromeando (laughs).* I tell Manuel, when we finish these classes, if there is another, I tell him that I will continue because it interests me. Even my nieces tell me, "Yes, how great that you are going [to computer classes]!" They say, "This way you can find a better job and leave where you are now!" (laughs) I tell them, "In a bit you'll see me working in the offices!" (laughs) but, you know, just joking (laughs).

While stressing her personal interest in learning more about computers, she humorously dismisses the possibility of career advancement by this means.

In contrast to Rosa, Manuel had greater contact with computers at his workplace before he took the computer course. He said that he knew a little bit about using computers, but in his words, "*pero* bien *poquito*" (but *very* little). While working at the furniture store, his boss taught him how to press specific keys on the keyboard to find out inventory and price information. He used the computer, "*nada más para sacar información de, por ejemplo, de mercancía, [para ver lo que] estaba en la bodega, para sacar precios, en ventas*." ("Only to get information about, for example, merchandise, [to see what] was in the warehouse, to get prices, in sales.") In an interview he recounted

how his boss explained to him and his co-workers how to use the computerized furniture inventory system:

> *La señora nos decía como usarla. Por ejemplo, si querían un* dresser, *ella no más nos decía que está en "x" letra, y allí salía todo lo que estaba en esa letra. Por ejemplo, de colchones, ella nos decía "*matress,*" la "m", y salía todos los tipos de colchones.*
> The boss would tell us how to use it. For example, if they wanted a *dresser*, she would just tell us that it's at "x" letter, and then everything that was in that letter appeared. For example, for ma tresses, she would say "*mattress*," the letter "m," and different types of matresses would appear.

By pressing specific letters on the keyboard, he could access information so that he could sell furniture. Now, after taking the computer course at NCC, Manuel said he knew how to type with both hands rather than just pushing one button at a time with one finger. However, although he stated during the interview that "knowing computer skills makes it easier to get a job," Manuel spoke in general terms and did not mention anything about computer skills being useful in his current search for employment in the construction industry.

Rosa and Manuel's experience points to the fact that there is not a linear relationship between economic opportunity and computer skills, even though both broadly stated that computer experience helps people to find work more easily. The impact of computer technology seemed to be more in the domain of their personal lives, rather than in their careers. Still Rosa felt that with her new computer skills she could move up within her current workplace, from the "back" of the store to the "front." Even if this did not represent a major economic shift, it still could be a meaningful move up for Rosa and her family.

Discussion:

> Mónica Gallegos: But the fact that they were able to save $800 for a computer in a year means that they say that "I need to do this for myself'....They are desperately wanting to move ahead and to have a computer... they will work as hard as they have to, you know, clean ten extra houses to get the computer... [The idea is] 'If I have the equipment, somehow I'll obtain results.
> Researcher: How well do you think that matches up with the reality?
> Mónica: Oh it doesn't!

According to Warschauer (2001), the "digital divide," as a political and educational issue, has usually been framed in terms of the factor of *access* to technology on the part of individuals and social groups. This focus on access carries the implicit assumption that computer literacy is a unitary phenomenon leading to economic advancement and social mobility: if only low-income people could obtain state-of-the-art computer equipment, the "divide" and all associated opportunity gaps could be overcome. Indeed, as the above quote from Neighborhood Computer Center instructor Mónica Gallegos suggests, home computing equipment is now within the reach of many working class families, who see owning a computer as a powerful symbol of economic advancement and "the future." Although the Garza family had been computing for much longer than the Fuentes, at the time of the interview both couples had similar computer equipment, with high-speed processors and dial-up Internet access. What the two families usually did on the Internet was broadly similar as well--type in URLs and click on links to visit favorite websites where they could gain information on topics of interest. With the price of technology continuing to fall, *access* in the most basic sense seems to be a less of a problem for many working people in the US.

However, while both families benefitted from finding information via the World Wide Web, it can be noted that their e-mail practices varied markedly. Whereas Carmen

was "an e-mail addict," keeping in touch electronically with numerous friends and family members in Mexico, and Edgar found e-mail invaluable for professional networking, Manuel and Rosa made little use of this technology. Although they obtained Internet e-mail accounts through their NCC class, there was only one person in Mexico that they could e-mail: Manuel's sister who had e-mail at her desk at work. Therefore, while Manuel had sent mail electronically on a couple of occasions, Rosa was in no danger of becoming an e-mail addict. This points out that *access* to technology alone does not create meaningful social and professional networking opportunities.

In terms of Warschauer's (2001) second category: *content,* a similarity may be noted in that both Carmen Garza and Rosa Fuentes used the Internet to garner health information.[6] However, the differences between the families are more striking. Much of Edgar's computer use was intimately connected with his social and professional identity as a scientist. On the Internet he sought information on natural resource issues from the websites of Latin American government ministries and research centers. This searching was connected to his dissertation, his job search, and his consulting projects, all of which were also furthered through e-mail. Even when he played computer games in his limited spare time, they were scientific simulation games that involved "creating" new organisms and eco-systems. Like many other middle-class men, Edgar was never far from his professional identity.

The other three adults did not have this strong sense of professional identity: Carmen gave up her professional career, while neither Manuel nor Rosa had the opportunity to prepare for one. All three used the Internet to gain information on

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[6] As noted previously, Warschauer (in press) indicates that this is a common practice among women who use the Internet.

(gendered) topics of interest. For Carmen, these included parenting, literature, and spirituality, along with health. Rosa frequented websites on women's health and sexuality, and took advantage of the Internet to keep up with her favorite soap operas. Manuel followed sports on-line and particularly enjoyed the Playboy website. While there is nothing innately "working class" about interests in sex, sports, and TV, Carmen's avid on-line investigation of books is probably connected to the fact that she is more highly educated.

Indeed, the Garzas' education has given them a great deal of what Warschauer (2001) refers to as *human capital*, which they have been able to make use of and indeed increase on-line. Because Carmen and Edgar are highly educated bilinguals, with advanced literacy skills in both English and Spanish, they had a much wider choice of websites than did the Fuentes. Indeed, Edgar's scientific and economic education and his professional job experience greatly facilitated his Internet use. Although Carmen did not complete her education, she still benefitted from it. For example, her university training in biology undoubtedly made it easier for her to comprehend a wide variety of health websites.

Moreover, when looking for health facts, Carmen passed right over the Spanish websites because there was more information available on-line in English. This was an option not available to Rosa. Although Carmen was not enthusiastic about her clerical job, her years of computer experience had given her the skills she needed to help support the family in this way while Edgar was in school. In comparison, while Rosa and Manuel had sufficient first-language literacy skills to easily comprehend websites in Spanish, their English literacy was more limited. Rosa went mostly to Spanish-language

websites, while Manuel visited sites where the visual presentation was more important than the text. In terms of human capital, the Fuentes' computer skills were more limited than the Garzas', and their skills were very much linked to what they could learn at NCC. Nevertheless, the health information that Rosa had been able to obtain on the Internet (e.g. about AIDS prevention) could be seen as a form of human capital with potentially life-saving results.

In regards to Warschauer's (2001) category of *social capital*, the Garzas middle-class family and professional networks have clearly helped give them access to computer technology. Recall that it was Edgar's father who first brought a computer home from his company in the 1980s when Edgar and Carmen were high-school sweethearts. Indeed, much of Carmen's access has been mediated by her gendered role as Edgar's girlfriend and wife: she has never had access on her own other than in her clerical position at her US workplace. In contrast, Edgar was able to "learn by playing" with his colleagues in the Mexican government. Moreover, as Warschauer writes, "The larger question is not whether social capital provides support for using the Internet, but whether using the Internet extends people's social capital" (in press, p. 72); clearly, the professional networking that Edgar has been able to participate in via e-mail both draws on and increases his social capital and thus his career opportunities.

Although the working class networks to which Manuel and Rosa belong have only just begun to access computer technology in very recent years, the Fuentes have also drawn on social capital in pursuing computer literacy. It was their daughter Claudia's enthusiasm over her cousins' home computer games that led Rosa to investigate the possibility of computer classes. In so doing, she tapped the knowledge of her colleagues

at the dry-cleaner's before coming across the NCC while walking through her neighborhood. In keeping with Warschauer's concerns, the NCC is now increasing the level of both social and human capital in the community.

Although the computer may serve as an important symbol, as Mónica Gallegos points out above, in more practical terms it means little for working class families if they do not know how to operate the equipment. This leads to Warschauer's final category: *institutional reform*. While the Garzas had extensive and sustained contact with computers as a result of their social capital, it is clearly institutional reform (in the form of federal funding of the Community Technology Center) which allowed the Fuentes more access to developing their computer practices.

The Neighborhood Computer Center, one of many community technology centers currently funded by the US government, has many particular features which make it successful in introducing working class families to computer technology. Other cases of institutional reform may not be as successful. Warschauer (in press) cites a project which failed because it did not seek to meet the needs of the people using the technology; rather the project simply sought to increase numbers of computer users to show funders evidence of "success". But it is precisely NCC's thrust on serving the needs of people in the community first and foremost which makes the program work. While federal funding is crucial, it is the local staff of NCC with strong ties to the community which really breathes life into this institutional reform.

When asked about the success of NCC's classes, NCC instructor Mónica Gallegos remarks:

> In terms of teaching [computer skills], the way that its taught.... it's the power dynamic. I live in this neighborhood – the people know me and see me walking

> down the street. I work with their kids, I work with adults. I hang out with the parents. I mean, I'll go to dinner with them. I have made friends with the students in my class. The power dynamics of... I work here and you don't – it isn't about that. It's like, I have a job thanks to you – that's what it is for me.

With such close ties to the community, NCC is able to respond closely to their needs. It is the staff at NCC that recognized the need for childcare. Childcare proved to be a vital element that contributed to women's attendence at NCC. In fact, many of the classes had more women than men enrolled. This would not have been possible without childcare. To summarize, the key features of institutional reform in NCC's case were: federal funding, quality instruction, personnel from the community, and childcare.

Data suggest that NCC made a significant impact, and without this intervention it would have been far more difficult for the Fuetes to use their home computer to the extent that they currently do. While the cost of the computer itself was not completely out of reach for the family, the cost of computer classes certainly was. Essentially NCC was a place where, with guided instruction and child care provided, the Fuentes had the opportunity to learn more about computing and use computers in ways that were personally meaningful. In this case, institutional reform proved to be a key factor for moving towards technological equity.

Finally to Warschauer's (2001) categories, we add *affect* which he subsumed under *human capital.* We do so because it is clear that emotions around computing have a strong influence on our participants' computer practices. While Edgar Garza remembered long ago "learning by playing," Rosa Fuentes recalled how quite recently she was even afraid to touch the mouse for fear of breaking the machine. Indeed, much of NCC instructor Edmundo's emphasis was on breaking down this common fear from the very first night of class. In Edmundo's words (fieldnotes, 3/18/01, translated from

Spanish):

> It will be hard, but not impossible...We are not young ones... The computer is a new world. Children use the computer as if it were their first language. Adults, on the other hand have more trouble.... Don't be afraid...There is nothing, NOTHING you can do to break the computers, other than pouring water on it. The computers are here for you to experiment with. This class should not be painful. We have no exams. We just want you to come and practice.

Throughout the course Edmundo sought to personalize the experience and to diminish fear. At one point in the course he had participants choose their desktop colors and desktop themes in order to make the computers seem more agreeable to the users and to show them that they did in fact have control over what the computer screen looked like. In another class task, students used Microsoft Publisher to create individual business cards, complete with personal icons and designs. Edmundo used these class activities as a way to lessen his students' fears and use computers in personally meaningful ways. Rosa's remarks about fear and Edmundo's urgings for students not to be fearful, along with other data from students at NCC indicate that fear toward the computer is not simply a personal matter that exists only in the minds of idiosyncratic individuals.

While fear of machines is certainly present in many sectors of society, we suggest that there is also a class element present in fear toward computers. Data gathered at NCC suggest that rather than an "irrational" fear of the unknown, some working-class students' fears were linked to practical concerns of money. If they experimented and broke the equipment, they feared the cost of replacement. This greatly contrasts with Edgar's ease of "learning by playing" while working as a junior economist for the Mexican government. In this sense, affect may be linked to issues of entitlement. Who has the luxury to feel entitled to "play around" with equipment?

Conclusion:

To summarize the class and gender trends from these two studies, Edgar, the only middle-class male computer user in the study, was the only one who was able to use the computer for significant economic gains. If we define social class in terms of cultural capital (Bourdieu, 1991), it is clear that Carmen and especially Edgar Garza are well situated in this regard, due to their opportunities for higher education and also due to their transnational networks of family, friends and professional associates. Edgar Garza's computer use facilitated the parlaying of his cultural capital into economic capital when he obtained the job of his choice on graduation. None of the other participants in the study has been able to use the computer to orchestrate their resources in the same way: Carmen's gendered family responsibilities have not allowed her to complete her professional studies, while Manuel and Rosa have had no opportunity for higher education and professional preparation. Moreover, very few of the Fuentes' personal connections in Mexico have computer access to allow transnational networking of the kind that Edgar has been able to engage in.

Social class may also be defined in terms of career aspirations. Here the difference between Carmen and Rosa is instructive. Carmen's bilingual clerical skills were useful for supporting the family while Edgar completed his graduate education; however, Carmen had little enthusiasm for this occupation. Normally an expressive speaker, she lost all the affect from her voice when describing her responsibilities at the furniture company. In contrast, Rosa was enthusiastic about the possibility of being asked to take on clerical duties at the dry cleaner where she works: "The day when my manager asks me, 'Do you know how to use a computer?' I will joyfully tell her, 'Yes!'"

What for Carmen was an unpleasant daily reality was for Rosa almost an impossible dream, something to joke about with her cousins who teased her that she would soon be working in an office. Writing about the aspirations of immigrant women in Los Angeles, Rockhill (1993) comments:

> The dream is to be a secretary or a receptionist, but it is more than this -- it is to enter the world of middle-class America, to wear dresses and high heels, to look and be the female image they see smiling back at them in magazines, on their TV screens and billboards (170-171).

For Carmen, in contrast, her dream was to be a veterinarian, but her priority was the well-being of her family. She goes to work in slacks, and sees no glamor in "entering people. Or checking orders...."

What can community technology centers in working-class communities learn from the experiences of the Garzas and Fuentes? First, program planners need to be clear that computer skills alone do not lead to economic opportunity. And yet, they still can provide meaningful access for individuals and communities. As Warschauer (in press) writes, outcomes of increased participation in computer practices can include "a wide range of issues related to learning, emotional satisfaction, social capital, [and] participation" as well as "income and other forms of social or economic benefit" (p. 99). This is clear to NCC instructor Mónica Gallegos, who is both enthusiastic about introducing computer skills to her community and candid about the fact that new immigrant computer users' expectations of economic advancement may not be realistic. However, these nuances may be less obvious to funders, who tend to look only at economic outcomes of computer training, while ignoring educational, affective, social, and civic benefits that come from learning new skills and participating in community activities.

It is unrealistic to expect that community technology centers can overcome all the social and economic gaps that exist in our society, of which the "digital divide" is only a symptom. Clearly, the computer practices of the adults who participated in our study are differentiated by class and gender, as are the economic outcomes of these computer practices. Nevertheless, in our view, public efforts at increasing computer access and skills in low-income communities are important and valuable for educational as well as directly economic reasons. The Fuentes' positive experience at NCC shows the feasibility of providing computer education to adults in their own neighborhoods, with childcare available, and with culturally sensitive instructors. Our study noted the key role that instructors from the community can play in helping new immigrant computer users overcome their fear of technology, so that they can begin to experience Edgar Garza's sense of entitlement to "learn by playing." With the sense that it is safe to experiment, new users will be able to continue increasing their skills on their own once courses finish--thus gaining access for their own purposes to the vast amounts of information on the World Wide Web. Contrary to FCC Chairman Michael Powell's (2001) declaration that the "digital divide" is merely a "Mercedes divide,"[7] Rosa's use of an inexpensive home computer to access information on AIDS prevention in privacy via the Internet illustrates just one reason why this technology should not be seen as a frivolous luxury.

Meanwhile, it is important for researchers not to fall in with the popular "digital divide" rhetoric and discount the abilities of women, people of color, immigrants, and

[7] He elaborated by stating: "I'd like to have one, but I can't afford one," suggesting that technological inclusion is an extravagant luxury (http://www.thegully.com/essays/US/politics_2001/010212powell_fcc.html accessed in May 2001).

working class people to develop computer literacies in accordance with their own needs and interests.[8] While our study illustrates the value of examining the computer practices in which diverse individuals and communities participate, there is a need for more research in this area. Further research might look at the impact of varied computer practices on gender roles in families, at the experiences of newly computer literate individuals who *do* manage to move into employment that requires computer skills, at the ways Internet information is employed by the individuals who obtain it, at the intricacies of biliterate computer use, and at possibilities for combining English language training with computer training so as to give immigrant computer users access to a greater variety of websites.

In any case, what is at issue here is not whether significant social inequalities exist with respect to computer technology; they do. Rather, the issue is how these inequalities are discussed, represented and addressed in research. We suggest that rather than relegating whole categories of people to the "illiterate" side of the "digital divide," future research should explore what different individuals *can* do and *choose* to do with computers. Furthermore, more research is needed to assess the impact of these practices on family and community life as well as on prospects for economic advancement. Hopefully, with futher in-depth examination of computer literacy practices, we can assess where we are in terms of social inclusion and contribute to planning for increased socio-technological equity.

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[8] In a previous study (Dabach 2000) the focal participant, an immigrant with limited English literacy, used the Internet with greater facility than non-hyperlinked text; the highly visual content, the use of icons and the technologically embedded features such as hypertext links and "bookmarks" make it possible for many with limited English literacy to navigate the Internet and consistently return to websites of their choice.

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